Name_____ Date_____

Forces and Gravity

Pre-Lab:

Force-

Gravity-

Air Resistance-

Lab Procedure:

Materials:

Vacuum (any lab pump or vacuum cleaner)
Long glass or plastic tube
Marshmallows
Two rubber stoppers
One light object (feather, piece of paper, etc.)
One heavy object (coin, eraser, etc.)
Timer

Procedure:

1. Place the long tube flat on a table.
2. Put a marshmallow or two inside the tube and slide them to the middle.
3. Now create a vacuum tube by placing a rubber stopper at one end and attaching the vacuum hose to the other end. Ask your teacher for help with this step!
4. Now turn on the vacuum and record what happens to the marshmallows on your worksheet.
5. After a few minutes, turn off the vacuum and gently pull off the rubber stopper from the tube. Be careful not to pull the stopper off too fast!

6. Remove the marshmallows from the tube and place the two objects (one light and one heavy) inside at one end.

7. With the vacuum turned off and the tube closed at both ends, turn it straight up so that the two objects fall from the top to the bottom.

8. When the objects begin to fall, have two of your classmates time how long it takes either object to reach the bottom of the tube. Record these values on your worksheet!

9. Place the tube back onto the table and turn the vacuum on.

10. After the vacuum has been on for a few minutes, turn it off. Then turn it straight up so that the two objects fall from the top to the bottom.

11. Have two of your classmates time how long the objects take to reach the bottom and record these values on your worksheet!

12. Try explaining the differences between the four times that you recorded.

Observations:

	Light Object	*Heavy Object*
In Air:		
In Vacuum:		

Conclusions

1. What happened to the marshmallow when the vacuum was turned on? Why?

2. What is air resistance?

3. Is there any air resistance in a vacuum?

Bonus

4. Who was Isaac Newton?